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144

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/624,810	07/24/2000	Robert William Bruce	13DV13228	6522
30952	7590	03/24/2004	EXAMINER	
HARTMAN AND HARTMAN, P.C.			ZERVIGON, RUDY	
552 EAST 700 NORTH			ART UNIT	
VAIPARAISO, IN 46383			PAPER NUMBER	

1763

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

51

Office Action Summary	Application No. 09/624,810	Applicant(s) BRUCE ET AL.	
	Examiner Rudy Zervigon	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/1/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The affidavit under 37 CFR 1.132 filed January 10, 2003 is insufficient to overcome the rejection of claims 1-4, 6, 7, 9, and 10 based upon 35 U.S.C. 102(b) as being anticipated by Dietrich et al (U.S. Pat. 4,988,844), and claims 5 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Dietrich et al (U.S. Pat. 4,988,844) as set forth in the last Office action because:

2. It refers only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

3. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-4, 6, 7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Dietrich et al (U.S. Pat. 4,988,844). Dietrich et al teaches an electron beam (10, 11; Figure 1; column 2, lines 40-51) melting furnace (Figure 1 – “electron beam melting furnaces”; column 2, lines 11-12) with a vacuum chamber (1, Fig.1; column 2, lines 40-55). Dietrich et al further teaches a crucible (6, Fig.1; column 2, lines 40-55) within the vacuum chamber and a material (“bath of molten evaporite”; column 2, lines 40-55) surrounded by and contained within the crucible. Dietrich et al also teaches electron beam guns (10, 11; Fig.1; column 2, lines 40-55) that can project an electron beam onto the surface of the coating material (Fig.1). Each electron

Art Unit: 1763

beam gun having a higher intensity at a location between the surface of the coating material and the crucible than at a central region of the surface of the coating material – Here, Dietrich et al teaches that a combination of two electron beam guns can produce the claimed intensity profile in the x direction as shown in the graph of Figure 3 (38). Further, from the arcuate (26,27, Fig.1) projection of each electron beam as shown and described (column 3, lines 38-40, 10-11, 25-26), Dietrich et al teaches that each electron beam produces the claimed intensity profile in the y direction (perpendicular direction, into/out of the plane of Figure 1) as shown in the graph of Figure 3 (38).

Dietrich et al teaches the capability (column 2, lines 53-58; “despite the force urging them radially toward the outside”; column 3, lines 25-30) of projecting each electron beam onto a surface portion of the crucible contiguous with the “bath of molten evaporite” (column 2, lines 40-55). Dietrich et al teaches the capability, in the above cited portions of the patent, a beam pattern (as shown in Figure 11 of the application) with proximal and distal points at the perimeter of the beam pattern – Here, Dietrich et al already establishes the capability of forming one arcuate beam consisting of a semi-circle as described (column 3, lines 25-30). It is evident from the Dietrich et al deflection control (column 2, lines 53-58; column 4, lines 51-55) of the electron beams that, once “conveyor rod 5” (column 2, line 43) is raised the shaded region 4, Figure 2 becomes smaller and the beams 26 and 27 increase in arc length (all else constant). From the teachings of the beam geometry control above, it is appreciated that Dietrich can provide means for projecting a separate beam pattern (one of two) on the crucible surface (15, Figure 3) with a controlled intensity (38, Figure 3)

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dietrich et al (U.S. Pat. 4,988,844), as applied to claims 1-4, 6, and 7 above, and further in view of no additional references. Dietrich et al does not precisely teach the relative intensity, in percentages, as a function of position over a dimension of the crucible (column 4, line 63 – column 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the Dietrich et al relative intensity, in percentages, as a function of position over a dimension of the crucible whereby the intensity of the beam pattern at the proximal and distal points is about 30% to about 70% less than the intensity elsewhere at the perimeter of the beam.

Motivation for configuring the Dietrich et al relative intensity, in percentages, as a function of position over a dimension of the crucible whereby the intensity of the beam pattern at the proximal and distal points is about 30% to about 70% less than the intensity elsewhere at the perimeter of the beam is drawn to applying the electron beams “symmetrically to the melting bath” (column 4, lines 51-55)

Response to Arguments

8. Applicant's arguments filed September 30, 2002; October 1, 2002; January 10, 2003; and December 1, 2003 have been fully considered but they are not persuasive.

9. Applicant states:

“

Applicant cannot find any support for the conclusion that Dietrich discloses or even suggests that Dietrich's electrode 4 could possibly force the beams 17 and 18 laterally from the molten bath 8 to the extent that they project onto the crucible 6.

“

In response, the Examiner directs Applicant to the numerous citations by Dietrich which provide ample teaching for the “capability” of Dietrich's apparatus to control beams 17 and 18 laterally from the molten bath 8 to the extent that they project onto the crucible 6, not entirely however, as applicant suggest, by Dietrich's electrode 4:

“

The electron beam is guided to the desired position in the units mentioned by electric and/or magnetic fields. The position of the strike point of the electron beam is determined by the appropriate dimensioning and adjusting of an electric or magnetic deflecting system as well as by the application of appropriately regulated electric voltage or current to the deflecting system.

“ (column 1, lines 28-34)

In translation, Dietrich is establishing the level of ordinary skill in the art as is also found in his apparatus for electron beam positional control. In particular, Dietrich provides electron beams that are guided to the desired position in the units mentioned by electric (4) and/or magnetic

Art Unit: 1763

fields. The position of the strike point of the electron beam is determined by the appropriate dimensioning (12, 13; column 3, lines 3-14) and adjusting of an electric (column 4, line 63-column 5, line 24) or magnetic deflecting system as well as by the application of appropriately regulated electric voltage or current to the deflecting system (column 3, lines 51-68).

Further:

“

To position the electron beams 17, 18, accurately in their theoretical optimum positions despite the force urging them radially toward the outside, the actual positions of the beams are determined according to the invention and are adjusted according to the theoretical desired positions. To determine the actual value, a special setup 22, 23 is provided, which is described below.

“(column 3, lines 25-32)

In translation, Dietrich identifies the physical forces acting *against* his position control which act to bring the electron beams into the desired positions. As such, imparting less control by Dietrich's position control system (12, 13) would allow Dietrich's identified physical force that his control is combating to force the electron beams “radially toward the outside”.

In response to Applicant's opinion that the Examiner has “dismissed Applicant's claimed requirement that their electron beam 28 has a higher intensity at an interface at the surface of the molten ingot 26 with the crucible 56 (claim 1)...”, the Examiner cites a well established history of said concerns:

“

Art Unit: 1763

Each electron beam gun having a higher intensity at a location between the surface of the coating material and the crucible than at a central region of the surface of the coating material – Here, Dietrich et al teaches that a combination of two electron beam guns can produce the claimed intensity profile in the x direction as shown in the graph of Figure 3 (38). Further, from the arcuate (26,27, Fig.1) projection of each electron beam as shown and described (column 3, lines 38-40, 10-11, 25-26), Dietrich et al teaches that each electron beam produces the claimed intensity profile in the y direction (perpendicular direction, into/out of the plane of Figure 1) as shown in the graph of Figure 3 (38).

“ - See above and prior actions, and compare Applicant’s Figure 11 and 12 with Dietrich’s Figure 3

As a result, the Examiner has provided concise citations for Dietrich’s teaching of Applicant’s claimed invention.

10. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., “beam intensities at the proximal points (e.g., 36 and 37) and distal points (e.g., 30-33) of Dietrich's beam patterns 26 and 27 would be lower than elsewhere within the beam patterns 26 and 27”) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

11. Applicant’s arguments with respect to rejections based on Public Use/on-sale Bar are convincing in view of Applicant’s interview with Examiner Mills and SPRE Tierney described

Art Unit: 1763

in Applicant's reply of January 10, 2003. As a result, the Examiner's rejections based on Public Use/on-sale Bar are hereby withdrawn.

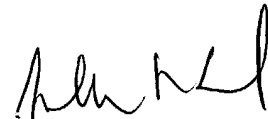
Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1763

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272.1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after fax phone number for the 1763 art unit is (703) 872-9306. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.



JEFFRIE R. LUND
PRIMARY EXAMINER